PATENT
Attorney Docket No. 1898524

DEVICE FOR SUPPORTING DUCTWORK DURING INSTALLATION

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to the general art of supports, and to the particular field of supports used in the building industry.

2. Discussion of the Related Art

Ductwork is often used in buildings to transfer air, conduits and the like. This ductwork is often shipped in long sections that exceed the length of a worker's reach. Often, these long sections of ductwork must be mounted in difficult to reach areas, including overhead ceilings and the like. Handling such long sections of ductwork may be cumbersome and difficult, especially for one worker.

Therefore, installation of ductwork often requires more than one worker. One worker supports the ductwork while the other worker mounts the ductwork in place. This can be a time consuming job and since more than one worker is involved, the job may become expensive. Often, it is not practical for two or more workers to devote time to installing ductwork. This may require delaying the

installation of ductwork until a plurality of workers are available. This may have adverse effects on a building schedule. Also, a self-employed worker may have to hire extra help, which he may not otherwise need, to install ductwork. This may not be cost-effective.

Therefore, there is a need for a means which can be used to support ductwork so one worker can install long sections of ductwork without requiring the assistance of other workers.

Many buildings have varying dimensions adjacent to the ductwork locations. Accordingly, any device which is used in connection with ductwork must be easily adaptable to various dimensions.

Therefore, there is a need for a means which can be used to support ductwork so one worker can install long sections of ductwork without requiring the assistance of other workers and which is easily and quickly adjustable.

Furthermore, since space is often at a premium, and time is valuable, any tool or device used in the installation of ductwork should be easily stored and amenable to being placed in a condition for storage, yet which will be easy and quick to deploy into a use configuration.

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used to support ductwork so one worker can install long sections of ductwork without requiring the assistance of other workers and which is easy and quick to deploy into a use and/or a stored configuration.

Therefore, there is a need for a means which can be used to support ductwork so one worker can install long sections of ductwork without requiring the assistance of other workers and which provides the worker with an option of supporting the device using fasteners or clamps.

PRINCIPAL OBJECTS OF THE INVENTION

It is a main object of the present invention to provide a means which can be used to support ductwork so one worker can install long sections of ductwork without requiring the assistance of other workers.

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SUMMARY OF THE INVENTION

These, and other, objects are achieved by a support device for use in hanging ductwork which comprises a body unit adapted to support ductwork thereon while that ductwork is being installed in a building, the body unit including a central section, a first end section telescopingly attached to the central section, and a second end section telescopingly attached to the central section; a first leg section pivotally attached to the first end section; a second leg section pivotally attached to the second end section; a first attachment element on the first leg section, the first attachment element being adapted to mount on a building structural element adjacent to a position whereat ductwork will be installed; and a second attachment element on the first leg section, the second

attachment element being adapted to mount on a building structural element adjacent to a position whereat ductwork will be installed. The device further includes a ducthanger clamp having an attachment element engaging element and knurling, with the knurling being adapted to engage a floor joist to support an associated leg on the floor joist.

The device embodying the present invention is easily deployed and is adaptable to different sizes so it can be efficiently stored and deployed. Once deployed, it efficiently and effectively supports ductwork so one worker can install long sections of ductwork without requiring assistance. The device further provides a user with the option of supporting the device on a floor joist using nails or other fasteners or by using clamps.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

Figure 1 is a perspective view of a device for supporting ductwork and which embodies the present invention.

Figure 2 is a sectional view taken along line 2-2 of Figure 1.

Figure 3 is a perspective view of a ducthanger clamp included in the device embodying the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Other objects, features and advantages of the invention will become apparent from a consideration of the following detailed description and the accompanying drawings.

Referring to the Figures, it can be understood that the present invention is embodied in a support device 10 for use in hanging ductwork D on a building. Ductwork D is shown in dotted lines in Figure 1 and is of undefined length. The ductwork can be of any suitable size and shape as will occur to those skilled in the art based on the teaching of this disclosure.

Device 10 comprises a body unit 12 adapted to support ductwork D thereon while that ductwork is being installed in a building. Body unit 12 includes a tubular section 14 which has a first end 16, a second end 18, and a longitudinal axis 20 which extends between the first end 16 of the tubular section 14 and the second end 18 of the tubular section 14. A bore 22 extends between the first end 16 of the tubular section 14 and the second end 18 of the tubular section 14 and has an inner dimension 26 measured across the bore 22. A plurality of snap locking elements, such as snap locking element 28, are located on the tubular section 14.

A first end section 30 has a first end 32, a second end

34, and a longitudinal axis 36 which extends between the first end 32 of the first end section 30 and the second end 34 of the first end section 30. Longitudinal axis 36 of the first end section 30 is aligned with the longitudinal axis 20 of the tubular section 14 when the first end section 30 is in place coupled to the first end 16 of the tubular section 14 as shown in Figure 1. The first end section 30 has an outer dimension 40 which is smaller than the inner dimension 26 of the tubular section 14 and is telescopingly accommodated in the tubular section 14 adjacent to the first end 16 of the tubular section 14 in the use condition shown in Figure 1. The first end section 30 further has a pivot joint 42 on the first end 32 of the first end section 30. The snap locking elements 28 on the tubular section 14 engage the first end section 30 to hold the first end section 30 coupled to the tubular section 14. However, the snap locking elements 28 can be easily released to release the first end section 30 from the tubular section 14 to dismantle device 10 for storage as can be understood by one skilled in the art based on the teaching of this disclosure. The plurality of snap locking elements 28 permits the device 10 to adopt various sizes to accommodate different building dimensions as required.

A second end section 50 has a first end 52, a second

end 54, and a longitudinal axis 56 which extends between the first end 52 of the second end section 50 and the second end 54 of the second end section 50. Longitudinal axis 56 of the second end section 50 is aligned with the longitudinal axis 20 of the tubular section 14 when the second end section 50 is in place coupled to the second end 18 of the tubular section 14 as shown in Figure 1. The second end section 50 has an outer dimension 58 which is smaller than the inner dimension 26 of the tubular section 14 and is telescopingly accommodated in the tubular section 14 adjacent to the second end 18 of the tubular section 14 in the use condition shown in Figure 1. The second end section 50 further has a pivot joint 62 on the first end 52 of the second end section 50. The second end section 50 also has a plurality of snap lock elements to releasably lock the second end section 50 to the tubular section 14 for use. The snap lock elements on the end sections 30, 50 correspond in operation to the snap lock elements 28 on the tubular section 14 and are placed to allow device 10 to be sized according to the needs of a specific job.

A first leg section 70 has a first end 72, a second end 74, and a longitudinal axis 76 which extends between the first end 72 of the first leg section 70 and the second end 74 of the first leg section 70. The second end 74 of the

first leg section 70 is pivotally connected to the pivot joint 42 on the first end 32 of the first end section 30. The first leg section 70 further includes an eyelet element 80 on the second end 74 of the first leg section 70. Eyelet element 80 on the first leg section 70 is adapted to be attached to a building element to support the first leg section 70 in place on the building element. The first leg section 70 further includes at least one snap lock element 82 and at least one hanger element 84 mounted thereon. The first leg section 70 is movable between a first position having the longitudinal axis 76 of the first leg section 70 oriented perpendicular to the longitudinal axis 36 of the first end section 30 as shown in Figure 1 and a second position having the longitudinal axis 76 of said first leg section 70 oriented at an oblique angle, θ, to the longitudinal axis 36 of the first end section 30. The hanger elements 84 can be used to attach the device 10 to elements on the building as convenient. Thus, the device 10 is very versatile and can be used in connection with nearly any building situation.

A second leg section 90 has a first end 92, a second end 94, and a longitudinal axis 96 which extends between the first end 92 of the second leg section 90 and the second end 94 of the second leg section 90. The second end 94 of the

second leg section 90 is pivotally connected to the pivot joint 62 on the first end 52 of the second end section 50. The second leg section 90 further includes an eyelet element 100 on the second end 94 of the second leg section 90. Eyelet element 100 on the second leg section 90 is adapted to be attached to a building element to support the second leg section 90 in place on the building element. Second leg section 90 further includes at least one snap lock element 102 and at least one hanger element 104 mounted thereon. The second leg section 90 is movable between a first position shown in Figure 1 having the longitudinal axis 96 of the second leg section 90 oriented perpendicular to the longitudinal axis 56 of the second end section 50 and a second position having the longitudinal axis 96 of the second leg section 90 oriented at an oblique angle, θ_1, to the longitudinal axis 56 of the second end section 50.

As shown in Fig. 4, the device of the present invention further includes a ducthanger clamp 120 which includes a first handle section 122 having a handgrip end 124, a floor joist-engaging end 126, and a pivot section 128 which is located between the handgrip end 124 and the floor joist-engaging end 126. Knurling 130 is located on the floor joist-engaging end 126 and a pivot pin-accommodating hole 132 is defined through the pivot section 128. A second

handle section 140 has a handgrip end 142, a floor joist-engaging end 144, and a pivot section 146 which is located between the handgrip end 142 of the second handle section 140 and the floor joist-engaging end 144 of the second handle section 140. Knurling 148 is located on the floor joist-engaging end 144 of the second handle section 140, and a pivot pin-accommodating hole 150 is defined through the pivot section 146 of the second handle section 140.

A pivot pin 160 extends through the pivot pin-accommodating hole 132 on the first handle section 122 and through the pivot pin-accommodating hole 150 on the second handle section 140.

A spring 164 is mounted on the pivot pin and has a first end 166 engaging the first handle section 122 and a second end 168 engaging the second handle section 140. An eyelet element-engaging element 170 is located on the second handle section 140 near the pivot section 146 of the second handle section 140.

The knurling 130 on the first handle section 122 and the knurling 148 on the second handle section 140 are adapted to engage a floor joist and support an associated leg section on the floor joist via the eyelet element on the associated leg section whereby the user can choose between the eyelet element or the clamps to support the device as

suitable depending on the load and/or the weight of the duct. The duct hanger hooks onto the clamps and all of the weight of the duct and the duct hanger is held to the floor joist. There can be two ducthanger clamps, one for each leg of the device.

It is to be understood that while certain forms of the present invention have been illustrated and described herein, it is not to be limited to the specific forms or arrangements of parts described and shown.